# 1. Naive Padding



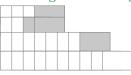
 $\begin{array}{c} {\rm Memory~Usage:} \\ {\rm 40~positions} \\ {\rm 60\%~waste} \end{array}$ 

# 2. Length Bucketing

Bucket 1 (len  $\leq$  3):

Bucket 2 (len  $\leq$  7):

Bucket 3 (len  $\leq 10$ ):



Memory Usage: 24 positions 25% waste

## 3. Dynamic Batching

Batch 1:

Batch 2: Batch 3:

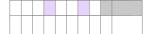


Memory Usage: 23 positions 15% waste Padding Separator

Real Token

#### 4. Packed Sequences

Pack 1: Pack 2:



Memory Usage: 20 positions 5% waste

## 5. Variable Length (Future)

Batch:



Memory Usage: 20 positions 0% waste

#### Performance Comparison

